

What is claimed is:

1. A signaling method for use in stream switching among a plurality of bitstreams, the bitstreams containing video data indicative of a plurality of video frames for each bitstream, wherein the bitstreams comprise at least one switching point so as to allow switching from a first bitstream to a second bitstream at said switching point, and at least one recovery point which defines a first correct or approximately correct picture in output order in the second bitstream decoded subsequent to said stream switching, said method characterized by  
providing in the bitstreams information indicative of the switching point so that said stream switching can be carried out based on the provided information, wherein  
the recovery point is different from the switching point.
2. The signaling method of claim 1, wherein each video frame comprises one or more slices and the video frames contain at least one isolated region associated with said one or more slices in the second bitstream decoded subsequent to said stream switching, said method characterized in that the provided information is further indicative of the isolated region.
3. The signaling method of claim 1, wherein the bitstreams are conveyed from a server device to a client device in a streaming network, said method characterized in that said stream switching is initiated by the server device.
4. The signaling method of claim 1, wherein the bitstreams are conveyed from a server device to a client device in a streaming network, said method characterized in that said stream switching is requested by the client device.
5. The signaling method of claim 1, wherein the signaling method is used in a transmission utilizing Real-time Transport Protocol (RTP).
6. The signaling method of claim 5, wherein a Session Description Protocol (SDP) is used to convey information indicative of characteristics of the first and second bitstreams.

7. The signaling method of claim 1, wherein said stream switching is carried out in transmission of the video data based on transmission conditions between a server device and a client device in a streaming network.

8. A streaming server device capable of switching streams among a plurality of bitstreams, the bitstreams containing video data indicative of a plurality of video frames for each bitstream, wherein the bitstreams comprise at least one switching point so as to allow switching from a first bitstream to a second bitstream at said switching point, and at least one recovery point which defines a first correct or approximately correct picture in output order in the second bitstream decoded subsequent to said stream switching, said streaming server device characterized by

a stream selector for selecting the first bitstream for transmission; and

means for providing in the bitstreams information indicative of the switching point, so as to allow the stream selector to select the second bitstream for transmission based on the provided information, wherein the recovery point is different from the switching point.

9. The streaming server device of claim 8, wherein each video frame comprises one or more slices and the video frames contain at least one isolated region associated with said one or more slices in the second bitstream decoded subsequent to said stream switching, and wherein the provided information is further indicative of the isolated region.

10. The streaming server device of claim 8, wherein the provided information is used in data transmission utilizing Real-time Transport Protocol (RTP).

11. The streaming server device of claim 10, wherein a Session Description Protocol (SDP) is used to convey information indicative of characteristics of the first and second bitstreams.

12. The streaming server device of claim 8, wherein said stream selector selects the second bitstream for stream switching based on transmission conditions between the streaming server device and a client device in a streaming network.

13. A streaming system capable of switching stream among a plurality of bitstreams, the bitstreams containing video data indicative of a plurality of video frames for each bitstream, wherein the bitstreams comprise at least one switching point so as to allow switching from a first bitstream to a second bitstream at said switching point, and at least one recovery point which defines a first correct or approximately correct picture in output order in the second bitstream decoded subsequent to said stream switching, said streaming system characterized by

at least one streaming client; and

at least one streaming server for transmitting one of the bitstreams to the streaming client so as to allow the streaming client to reconstruct the video frames based on the transmitted bitstream, wherein the streaming server comprises:

a stream selector for selecting the first bitstream for transmission and for further selecting the second bitstream, and

means for providing in the bitstreams information indicative of the switching point so as to allow the stream selector to select the second bitstream based on the provided information, wherein the recovery point is different from the switching point.

14. The streaming system of claim 13, wherein each video frame comprises one or more slices and the video frames contain at least one isolated region associated with said one or more slices in the second bitstream decoded subsequent to said stream switching, and wherein the provided information is further indicative of the isolated region.

15. The streaming system of claim 13, wherein said stream switching is initiated by the streaming server.

16. The streaming system of claim 13, wherein said stream switching is requested by the streaming client.

17. The streaming system of claim 13, wherein the provided information is used in data transmission utilizing Real-time Transport Protocol (RTP).

18. The streaming system of claim 17, wherein a Session Description Protocol (SDP) is used to convey information indicative of characteristics of the first and second bitstreams.

19. The streaming system of claim 13, wherein said stream selects the second bitstream for stream switching based on transmission conditions between the streaming server and the streaming client.

20. The streaming system of claim 13, further characterized by  
a video encoder to convert a video input signal into the video data; and  
means, responsive to the video data, for encoding the video data into the plurality of bitstreams.

21. A software program for use in a streaming system for stream switching among a plurality of bitstreams, the bitstreams containing video data indicative of a plurality of video frames for each bitstream, wherein the bitstreams comprise at least one switching point so as to allow switching from a first bitstream to a second bitstream at said switching point, and at least one recovery point which defines a first correct or approximately correct picture in output order in the second bitstream decoded subsequent to said stream switching, said computer program characterized by  
a code for determining said switching point; and  
a code for indicating said switching point in information provided in the bitstreams, so as to allow a streaming server to carrying out the stream switching based on the provided information, wherein the recovery point is different from the switching point.

22. The software program of claim 21, wherein each video frame comprises one or more slices and the video frames contain at least one isolated region associated with said one or more slices in the second bitstream decoded subsequent to said stream switching, and wherein the provided information is further indicative of the isolated region.

23. The software program of claim 21, wherein the provided information is used in data transmission utilizing Real-time Transport Protocol (RTP).

24. The software program of claim 23, wherein a Session Description Protocol (SDP) is used to convey information indicative of characteristics of the first and second bitstreams.